# Course Description& Objectives

This course conveys fundamental knowledge about capital markets and their operation. The main focus of the course is on the trading and **settlement** of cash **equities** and associated instruments. **Whilst** the course content will apply to most international markets at a **conceptual level** the Australian market will be used for **illustrative** purposes.

The aim of the course is to **equip** participants with an understanding of the structure and operations of the equities market. At the end of the course participants should:

* Be able to describe the role of capital markets in the raising of capital
* Understand the types of **instruments** traded
* Understand the roles of the main **segments** of the industry and be able to describe their part of **the transaction cycle**
* Know the **jargon** and concepts mostly applicable in the trading industry and associated entities (e.g. CCPs, CSDs, Banks, Exchanges, Registries etc.)
* Understand external events that have implications on trading (e.g. corporate actions, floats etc).

# Topic 1: The role of capital markets in raising and movement of capital

Capital markets are the fundamental means by which investors with capital to invest are matched with entities which require capital. There are two main ways in which investors may supply capital:

* By purchasing ***equity*** in companies when they are created or via the share market; in return investors expect returns from profits earned by the companies and increases in the value of their investment.
* By loaning funds directly or via intermediaries such as banks; in return investors expect to receive interest on the funds invested and ultimately to have their funds repaid.

In addition to the main equity and debt markets, a range of associated sectors have developed to support the movement of capital. Examples include the various types of **derivatives markets** which allow investors and users of capital to either manage the risk associated with their investments or to **speculate** on market movements as a **means** of earning additional returns.

## Primary and Secondary Markets

Investors who wish to invest their capital may either:

* Invest directly in a new company via a “**float**” or “**new issue**” of shares or debt instruments; this is termed a “Primary market” transaction and typically only occurs when the company “floats” on the market or a government or company issues new debt instruments.
* Buy and sell previously issued shares or debt instruments on a market; this allows investors to move capital into and out of the market as required; this is termed a “Secondary market” transaction. Secondary markets support the ability for investors to **acquire** or **dispose** of equity in established companies as required.

By buying a share the investor becomes a part owner of the company and is **entitled** to receive their part of any distribution of profits and vote at the company meetings. Most companies are created as “**limited liability**” which means that the shareholder is not liable for losses of the company.

The capital structure of a company has the following **segments**:

* “**Authorised share capital**” - this is set when the company is established, this is typically set at a very high number to allow for future growth, as such it does not relate to the actual value of the company.
* “**Issued share capital**” – this represents the number of shares which have been issued and paid for by investors; shares may be issued as either fully paid e.g. a Fully paid $1.00 share or partly paid e.g. $1.00 share paid to $0.50. Once the shares are issued via a primary market float they are listed for trading on a secondary market.
* The current market value of the company is measured by multiplying the number of issued shares by the market price of the company’s shares on the secondary market – this is called its “**market capitalization**”. Over time the price of successful companies shares will tend to rise compared to their issue price whilst unsuccessful companies shares will tend to fall in value.

The secondary market, therefore, sets the value of the company based on what investors consider to be a **fair value** for the shares on issue. It allows investors to realise profits from the increase in the value of the shares (termed a capital gain) or to limit losses from decreases in the price of the shares (termed a capital loss). The values traded on secondary markets greatly **exceed** those of primary markets as they support trading in all listed companies over the long term.

Whilst the secondary market determines company value it should be noted that it does not change the amount of capital the company has on issue (i.e. an increase in the value of the shares does not mean the company has more money in the bank or shares on issue) or directly affect the operations of the company (i.e. it does not change the profit or loss that the company is earning). The ability to determine a price for a company’s shares is a fundamental function of the secondary market.

## Types of Instruments

Capital markets trade a range of instruments to support the raising and management of capital. The main types include:

* Equities or Shares – these **instruments** are issued by companies to raise capital and, in most cases, they represent a direct investment in the **ownership** of the company.
* Debt – these instruments are issued by entities which wish to borrow funds on which they are prepared to pay interest and *ultimately* repay the funds borrowed. Debt instruments may be issued by governments or semi-government entities, banks and other intermediaries and by companies. They differ from equities in that they do not imply any right of ownership of the issuing entity but rather represent a set of cash flows on terms to which the lender and borrower agree.
* **Derivatives** – unlike equities and debt instruments which represent actual ownership or a set of agreed cash flows the value of these instruments is derived from underlying assets on which they are based for valuation purposes; as such they allow investors to gain monetary exposure to particular markets or assets without actually owning them. Most derivatives have a time component and involve a “gearing” factor which, together with the price of the underlying asset, determines the current price for a derivative. Derivatives can be used to protect the value of a portfolio of assets (**hedging**) or as a means of **speculating** on market movements.

Each type of instrument is discussed below.

### Equities

Companies may issue several types of equity instruments, these include:

* **Ordinary** shares – these represent a defined **proportion** of ownership of the company; if the company fails and is wound up the ordinary shareholders only receive funds back from the company if it has met all of its other commitments to creditors, paid back all debts to lenders and fully paid all outstanding wages to employees. Ordinary shareholders receive their part of profits earned by the company as “**dividends**” which are paid when the company’s financial condition allows for the distribution of profits. Ordinary shareholders **thus** share in the success or failure of the company through dividends received and capital gains in the value of the shares when successful or to loss of the purchase price of the shares if it fails.
* **Preference** shares – this class of instrument differs from an ordinary share in that it does not represent ownership of the company but does carry a fixed rate of return which must be paid before the company can distribute dividends to ordinary shareholders (i.e. these shares receive “preference” in the distribution of profits). In many ways, preference shares can be seen as a loan to the company which agrees to pay interest at a specified rate on the value loaned. Some preference shares are issued for a specific timeframe after which they may convert to ordinary shares (convertible preference) at a specific **ratio**. Under the terms of issue the company may not pay the specified return on preference shares if their financial condition **deteriorates**; if this occurs the terms of issue may specify that unpaid returns are “accumulated” until they can be paid (cumulative preference) or forfeited (non-cumulative preference).
* **Convertible notes** (trai phieu chuyen doi) - these instruments are issued to borrow funds from investors for a specific period of time at an interest rate specified when the notes are issued. At the end of the specific period the notes are converted to ordinary shares on pre-specified terms. As they will convert to ordinary shares in the future changes in the price of the ordinary shares will also be reflected in the prices for the notes.
* **Rights** (Quyền mua cổ phần mới) – these short term instruments are used to raise additional capital from existing shareholders by allowing them to purchase additional shares on advantageous terms. For example a company may wish to raise additional capital to fund a new project or takeover a competitor and wish to allow their existing shareholders to maintain their **proportion** of ownership in the company (if new shares were sold to anyone who wished to buy them the proportion owned by existing holders would be **diluted**). Rights are issued based on a ratio to ordinary shares – e.g. 1 right for each 10 ordinary shares held. They typically allow the rights holder to buy ordinary shares at a discount to the market price by paying the relevant “**application money** (tiền đặt mua chứng khoán)”. Rights may be issued as “**renounceable (**chứng từ sở hữu cổ phần có thể từ bỏ**)**” which means that the receiver can sell them rather than taking them up and paying the application money; in this case the price of the rights will reflect the difference between the value of application money payable and the current market price of the shares. Renounceable rights issues allow shareholders who do not wish to invest more in the company to receive some value from the rights in return for the dilution of their proportion of ownership of the company. Non renounceable rights are also issued but may only be exercised by existing shareholders; if they do not choose to exercise them the rights **lapse** for no value.
* Bonus issue shares – these are issued by companies as a means of distributing profits or increases in company value without paying out cash to shareholders. Typically they are issued on a ratio like rights issues and convert into ordinary shares after issue e.g. a company may have a bonus issue of 1 new share for each 20 held by existing shareholders (i.e. an increase of 5% in the number of shares). As might be expected the market may reflect the fact that the number of shares available on the company has increased by reducing the price of the ordinary shares being traded however this reduction may not fully reflect the actual dilution caused by the bonus issue.
* Exchange Traded Fund Units (ETFs) – these instruments represent part ownership in a fund composed of a portfolio or basket of underlying assets e.g. a property fund may hold a real estate portfolio, an equity fund may hold a portfolio of equity investments or a **commodity** fund may invest in a commodity such as gold. Their price reflects the value of the underlying fund’s assets as they rise or fall. The underlying portfolio is managed by a fund manager which invests the assets of the fund to gain the best return for unit holders. They are used by investors to gain exposure to asset classes which are not suitable for direct investment and to gain the advantages of professional management of the fund. Exchange traded funds are traded on the equities market however there are also a wide variety of managed funds available for purchase directly from the fund manager. Exchange traded funds have the advantage of being highly liquid and cost effective to buy and sell.

### Debt

Investors who wish to receive interest may simply deposit their funds with a bank and receive interest in return however the rate received will be low. The debt instruments discussed below are used to raise large amounts of funds by companies and governments bodies. Because they are traded they also offer the potential to earn extra profits through price **variances** (i.e. capital gains) caused by external factors such as a rise or fall in interest rates. Types of debt which are traded include:

* Vanilla Bonds / Notes[[1]](#footnote-1) – these instruments are issued by governments (sovereign bonds), semi-government bodies and companies (corporate bonds). In addition to primary market issues direct to investors bonds are widely traded by banks, other financial intermediaries and central banks. The majority of transactions are “over the counter[[2]](#footnote-2)” rather than performed on centralised markets. These instruments have the following features:
  + A face value – typically bonds have a high face value e.g. $100,000 which represents the “principle” loaned.
  + An interest rate payable on the face value; this is termed the “coupon” rate and it remains constant until the bond matures.
  + An expiry date – at expiry the bond issuer will repay the holder the face value of the bond plus any unpaid interest.
  + A payment frequency – this specifies how many times per year the issuer will pay interest to the bond holder e.g. quarterly or semi-annually.
* Indexed Bonds (Trái khoán hoàn trả theo chỉ số) – these instruments share the features of vanilla bonds except for the coupon rate; the rate paid for indexed bonds is based on an underlying **benchmark** such as the Reserve Bank Cash Rate or the CPI plus a fixed percentage. For example the rate may be expressed as “RBA cash rate plus 1.5%” or “LIBOR plus 2%”. The rate paid for each interest payment will thus **vary** based on movements in the underlying benchmark. Indexed bonds can be used as a hedge against **inflation** and interest rate movements.
* **Stapled** securities or hybrids– these have both debt and equity characteristics. Under the terms of issue they pay a rate of interest like a bond but, under certain specified *circumstances* the issuer may either delay payment of interest, redeem them prior to maturity or convert them to ordinary shares. They share many characteristics with preference shares and are being widely used by banks to raise their capital ratios to meet regulatory demand. They are typically traded on stock exchanges.
* Bills – unlike bonds which are used issued for medium to long terms bills are used for short term financing. Typically bills are sold at a discount from their face value with the discount representing the interest payable; on expiry the holder of the bill will receive the full value of the bill from the issuer. For example a 6 month bill with a face value of $100,000 and an interest rate of 5% may be bought by an investor for $97,500; at the end of six months they will receive back $100,000 – the additional $2,500 = ($100,000 \* 5%) / 2. Bills are commonly called “discount securities”. Most commercial bills are issued by banks which lend the initial amount to the borrower and guarantee re-payment to the purchasing investor (termed “Bank accepted bills”). The bank may then re-sell the bill to an investor at a slightly lower rate of interest e.g. in the case above the bank may have lent $97,000 to the borrower (i.e. at 6% interest) and re-sold it to the investor; the $500 difference is the banks margin for arranging and guaranteeing the bill. Bills may be traded multiple times before they mature; standard formulas are used to calculate the price so that the selling investor receives their interest for the period they have held the bill (i.e. the price rises as the bill approaches maturity).
* Debentures – these are debt instruments which are issued on an unsecured basis by companies wishing to raise finance; as such the only guarantee of payment is the credit worthiness of the issuer. They are typically issued with a smaller face value than bonds and, as they are unsecured, offer a higher interest rate. In Australia they were commonly issued by finance companies which used the funds for consumer finance. Debentures are sometimes traded on equities exchanges.

Bond pricing is typically expressed as a % yield, this allows bonds with different characteristics to be compared. Bond trades are priced by converting[[3]](#footnote-3) the yield to a price per $100 of face value e.g. $98.975 / $100 or $101.34 / $100. The price at which bonds are traded varies based on a range of factors including:

* The coupon of the bond compared to current market interest rates – as the coupon rate is fixed but market rates may rise or fall the price of the bond is increased or decreased to reflect the difference i.e. if the coupon rate on the bond is higher than market rates the price to buy the bond would be higher than the face value e.g. $101 per $100 of face value, if the coupon of the bond is lower than the current market rate the bond will sell at a discount to its face value e.g. $97.50 per $100 of face value.
* The interest accrued since the last payment date – as interest is only paid periodically it “accrues” as it is earned between payments. Thus the price of a bond which is close to an interest payment will be higher than one which has just had interest paid.
* The credit rating of the issuer; traditionally government bonds have been considered the lowest risk and as such pay a lower interest rate whereas corporate bond rates will vary based on the credit rating of the company issuing the debt. Rating agencies such as Standard & Poor’s (S&P) and Moody’s provide independent risk weightings which determine the rates which a company will have to pay. Bonds with a S&P rating higher than “BB” or a Moody’s rating higher than “Ba” are considered to be “Investment Grade” while those with lower ratings are sometimes called “Junk Bonds” and trade at much higher yields to reflect the higher risk.

**Example Bond Pricing**

This example uses the bond yield formula approved by the Reserve Bank of Australia. It compares 2 bonds with identical characteristics except for coupon rate; both transactions would deliver a 4% yield until maturity of the bonds:

|  |  |  |
| --- | --- | --- |
| Category | 5% Coupon Bond | 3% Coupon Bond |
| Current Market Yield | 4% | 4% |
| Face Value / Unit | $100 | $100 |
| Payment Frequency | 6 months | 6 months |
| Trade Date | 16/12/2013 | 16/12/2013 |
| Settlement Date | 17/12/2013 | 17/12/2013 |
| Last Interest Payment | 30/6/2013 | 30/6/2013 |
| Next Interest Payment | 31/12/2013 | 31/12/2013 |
| Maturity Date | 31/12/2020 | 31/12/2020 |
| Quote Basis | Cum Interest | Cum Interest |
| Days Accrued Interest | 184 | 184 |
| Price per $100 of Face Value | $108.37 | $95.33 |
| Accrued Interest | $2.31 | $1.39 |

(Practical – work through the ASX bond course).

### Derivatives

Derivatives are financial products with a value based on an underlying asset or collection of assets. The underlying assets may be stocks, stock **indices**, debt instruments or interest rates, commodities or virtually anything of value which might be traded. Ownership of a derivative does not imply ownership of the underlying assets but does allow the holder to “bet” on the direction of price movements of the asset via an agreement with another party. These “bets” may be used protect or hedge the value of a portfolio or as a means of speculating on future price movements.

Most derivative positions involves 2 parties, the seller or “writer” **undertakes** to meet the obligations of the particular derivative while the buyer or “taker” gains rights to the **exposure** **embodied** in the agreement. Most trading in derivatives is done using instruments with standard specifications and terms defined by the operator of the market. While these terms and conditions are standardised other characteristics such as the underlying asset and duration will vary between instruments. In addition to standardised derivatives issued and traded by organised markets specialised hedging or other requirements can be met through instruments created by agreement between 2 parties who negotiate the terms of the transaction, these are termed Over the Counter (OTC) positions. The term “Over the Counter” refers to any derivative contract which is not centrally traded and cleared; as such it includes instruments issued to investors by specialist providers who are responsible for the performance and final settlement of the position.

For a derivative position to exist a writer must offer to sell an instrument which is then purchased by a taker; this transaction creates the derivative position between the parties. For market traded derivatives this is followed by a process called “novation” where a “central counter party” (CCP) takes responsibility for the future performance of the transaction by becoming the seller to the actual buyer and the buyer to the actual seller. This is done by substituting 2 trades for the original trade as shown below:



The novation process breaks the link between buyer and seller and allows either party to close its position without involvement of the original counter party. The CCP manages its risk by requiring one or both parties to provide margins against their exposure, this ensures that when the derivative is exercised or matures the CCP has sufficient funds to ensure that the benefits of the position will be realised by the benefiting party. The margining process continues throughout the life of the position. Central clearing of derivatives underpins the performance of the derivatives market by providing consistent risk management of exposures, reduced counter party risk and the ability to monitor the aggregate exposure in the market.

The margins applied to derivatives positions fall into 2 main categories:

* Initial margin – this value is intended to cover the potential loss on the position under normal market conditions. Typically this is calculated using an established calculation methodology nominated by the CCP.
* Variation margin – this value is calculated on an ongoing basis during the life of the position; it is based on the current value of the position and uses market prices for the derivative instrument as its basis. It effectively re-values the position to its current market value.

Following the Global Financial Crisis (GFC) regulators have focused on reducing the risk to the overall market from improperly managed derivatives exposure by major industry participants. These measures have included:

* Closer monitoring of exposure within the industry through requirements to register the details of specific types of OTC positions so that overall market exposure can be tracked.
* Regulations which require centralised clearing of specific OTC transactions to reduce counter party exposure and to ensure that the risk is consistently managed.
* Changes to minimum capital requirements and ratios for industry participants such as banks to ensure they manage their derivatives exposure appropriately.

Derivatives typically provide leverage or gearing which provides investors with significantly higher exposure to the gain or loss from price movements of the underlying assets than would be the case by directly buying or selling the underlying assets. This effectively magnifies the profit or loss earned for a given investment. These profits or losses are paid or received by the counter party to the derivative contract.

Common types of derivatives include:

#### Options

Options – by buying an option the purchaser (taker) get the right (but not an obligation) to buy or sell the underlying asset; the seller (writer) of the option undertakes to perform the obligations of the option if called on to do so. Options may be either “Calls” which allows the taker to choose to buy the asset at a specified price at some time in the future or “Puts” which allow the taker to choose to sell the asset at a specified price in future. Exchange Traded Options (ETOs) on equities are widely traded; many equities exchanges offer an associated ETO market to provide derivatives exposure for the securities traded. By buying a call option an investor can protect themselves from a future price rise in a stock they wish to invest in. By buying a put option an investor can protect themselves from falls in price of a security they own. Options are also available based on the value of a specific market index, these allow investors to hedge against or speculate on overall market movements; these instruments are used widely by fund managers responsible for large portfolios.

Options positions can be used to offset the risk to both price rises and price falls.

Market traded ETO contracts are issued with standard terms which define:

* The units of the underlying asset covered by a single contract of the option e.g. 1000 units of the underlying stock per contract
* Type of exercise – “American” options may be exercised at any time up to expiry, “European” options can only be exercised at expiry.
* Method of exercise - most single stock options are settled by actual delivery of the asset whereas index options are settled for cash.

Variable characteristics of ETOs typically include:

* An underlying asset such as a specific stock (e.g. BHP) or index (e.g. ASX200)
* A time frame – most ETO markets list options with a range of expiry times (e.g. 3 months, 6 months)
* A type – Call or Put
* A strike price – this is the price at which the taker can “exercise” the option to either buy or sell the underlying asset.

When an option taker exercises their option the CCP randomly assigns a writer to sell or buy the stock to or from the taker at the strike price of the option. For a call option this would only occur where the strike price was less than the current price of the underlying stock (termed “in the money”), for a put option the strike price would have to be higher than the current market price for the option to be in the money. Most CCPs allow for automatic exercise of in the money options at expiry. If an option is not exercised it lapses with no value.

If a taker wishes to take the profit from an in the money option position but does not wish to actually trade the stock they can close the position by trading the other side of the position e.g. if a taker has an in the money call option they can take the profit by selling the same call option series – the difference between the current value of the original option and the price received from the sale will equal the profit on the position. The same method may be used by writers who wish to close out their exposure to an option, in this case they would buy an option of the same series – in this case the difference between the price they sold the option at and the price they had to pay to buy the closing leg would represent their profit or loss on the position.

The taker of an option’s risk is limited to the amount of their initial investment which is paid when the position is created. The writer’s risk includes the full profit or loss of any price movements during the life of the position; as a result the writer is required to post initial and variation margins to the CCP for the duration of their exposure.

(ASX Options course – practical)

#### Futures

Futures – unlike options which allow one party to choose if they wish to exercise the position futures are agreements to either buy or sell a specific asset at specific price on some future date. Unlike options, which have a fixed strike price, the price at which the futures contract trades when created is compared to the current “spot” price of the underlying asset at expiry to determine the profit or loss on the position. As such they can be used by producers of a product to “lock in” a currently available price for their goods when they are delivered in the future or users of a product to “lock in” the price they will have to pay in the future.

For example a gold miner expects to have 1000 oz. of gold to deliver in 6 months’ time. The current “spot” price for gold is $1300 / oz. with a quoted futures price for gold delivered in 6 months of $1290 / oz. As they expect the price to drop over the next 6 months they take a contact to sell 1000 oz. @ $1290 / oz. in 6 months. If in 6 months the current “spot” price has dropped to $1200 their futures contract will settle for approximately $90 / oz. \* 1000 oz. = $90,000. They will receive $1200 \* 1000 oz. when they sell the gold so the end result is they get $1,200,000 from delivering the gold plus the $90,000 from the futures contract giving a total return of $1,290,000 or $1290 / oz. (excluding transaction costs). If, however, the price did not fall as expected but rose instead and the miner did not close out the futures position then they would have had to pay the difference between the spot price at expiry and $1290 and lose any profit which would have been earned due to the higher price received for their gold. It should be noted that a user of gold could also use a futures contract to lock in the price they will pay in the future.

While futures were initially created to allow producers and consumers of commodities to manage the prices received or paid for their goods the majority of futures transactions are used to speculate on future price movements by traders who have no interest in actually delivering or receiving the commodity. While some markets allow settlement of futures contracts through physical delivery of the commodity the vast majority are settled for cash.

Futures positions can be closed out before expiry in the same way as options i.e. by trading the other side to the original trade; the difference in prices in the opening and closing sides of the position being the profit or loss. Unlike options, where a taker’s loss is limited to the initial cost of buying the option, futures can have a very high level of risk for both parties. This is especially true when speculating as the gearing effect multiplies the profits or losses. Losses from futures positions can greatly exceed the initial investment and, as the losses must be covered immediately via margin calls, can cause very significant cash flow issues in volatile markets.

Most market traded futures are novated and cleared by a CCP which is responsible for the final settlement of obligations under the contract. To cover their risk they margin both the buyer and seller at contract creation and also charge variation margins representing the unrealised profit or loss on the position until it expires. Most markets also allow for the trading of options on futures contracts which give the taker the right to enter a specific futures position if they wish to.

Futures are traded on a wide range of commodities including:

* Commodities such as gold, copper, silver, coal, steel etc.
* Agricultural products such as live cattle, wool, wheat, pork bellies, frozen orange juice etc.
* Short term and long term interest rates
* Single equities and stock indices
* Foreign currencies and exchange rates
* Weather
* Energy e.g. oil, gas, electricity.

#### Contracts for Difference (CFDs)

Contracts for Difference (CFDs) are an OTC derivative offered by a specialist brokers. They allow investors to realise the profit or loss from large position for a relatively small initial investment. As with other derivatives they allow the holder to get exposure to an asset without actually owning it. CFDs deliver a significant gearing effect to the speculator whose profits or losses are magnified given the level of initial investment risked in the transaction. Some CFD contracts do not have a specified time frame and continue until closed out via an opposite trade; other types are time limited to allow for short term speculation on market movements.

To manage their risk CFD issuers require purchasers to pay an initial margin and any losses must be covered by cash margins as they occur. Most CFD issuers also charge or pay interest on the underlying value of the position during its lifetime. Charges for trading CFDs vary with the type of market being traded e.g. a large Australian CFD issuer charges “brokerage” for share CFDs but for all other markets charges are based on the “spread” between buy and sell prices. The spread will vary to reflect the issuers ability to hedge the risk of the position e.g. while the share market is open the spread is 1 point on a ASX200 index CFD while out of hours the spread is 2 points.

CFDs can be used to either buy a position (going long) in the expectation that the price will rise or sell a position (going short) in the expectation that the price will fall. CFDs are available on a wide range of assets including:

* Shares & Market Indices
* Foreign Exchange
* Commodities including gold, silver, oil, copper, cocoa, orange juice and soybeans.

Most CFD issuers hedge their exposure to CFD positions by transacting on a market offering the same type of exposure. For example many CFDs on shares may be backed by actual trades to buy or sell the stock; the cost of the underlying hedge is financed through the interest charge applied to the CFD; likewise a CFD on a commodity could be hedged through a futures contract on a market which traded the commodity. CFD issuers have the ability to manage their risk at a net level e.g. they may issue multiple long and short CFDs on a single stock but only perform an actual trade for the net position after offsetting the long and short positions.

CFDs were first introduced by bookmakers to allow for betting on market movements, since then they have developed into a specialised segment which allows small investors to access specialised markets such as forex and commodities which were previously limited to larger professional investors. As with sports betting the range of products available continues to grow to support speculation on a very wide range of market events over a wide variety of time frames.

#### Warrants

Warrants are financial instruments issued by large financial institutions for trading or investment purposes. They are traded on equities markets and settle like share trades but their value is based on an underlying asset like other derivatives. Warrants can cover a wide range of underlying assets and may be designed to support investment or speculation in the underlying asset. Besides the fact that they are based on underlying assets there are no standard features which apply to all warrant types.

Various types of warrants provide a range of risk / reward profiles, support multiple investment objectives and provide varying levels of gearing. Unlike options where the performance of the position is guaranteed by a CCP the warrant issuer is responsible for the performance and ultimate settlement of the position; as such the credit rating of the issuer is highly significant when assessing the risk of warrant positions. Markets which support warrants trading specify minimum financial requirements for warrant issuers but they do not specify standard conditions for the warrants. The terms and conditions of each warrant series are specified by the issuer and vary widely to support a wide range of specific investment and trading objectives; investors should clearly understand the terms and conditions of the warrants which they chose to trade.

The most basic types of warrants are call and put warrants on shares, in effect these provide investors with similar benefits to options over a longer time frame without the need to manage margins on the position. Features of call and put warrants can include:

* Coverage – if the issuer actually buys the underlying asset and places it in trust pending exercise the warrant is said to be “Covered”; the listing market typically specifies the requirements which must be met for a warrant to be traded as a covered warrant.
* Settlement – some warrants are deliverable i.e. they give the holder of a call warrant the right to buy the underlying asset or the holder of a put warrant the right to sell the underlying assets. Cash settled warrants do not involve a transfer of assets as the “in the money” value of the position is paid to the holder by the issuer.
* Exercise price – this is the “strike” price which must be paid by the investor to exercise a call warrant (to purchase the underlying asset) or the price paid by the issuer of a put warrant (to buy the underlying asset) to the investor.
* Exercise type – this may be either American which allows the holder to exercise the warrant at any time or European which can only be exercise at maturity.
* Expiry date – this defines the last time when an investor can exercise the warrant.
* Issue size – this defines the number of warrants of a particular series which can be issued; in some cases the issuer may reserve the right to issue more warrants without notice to holders.
* Conversion ratio – this specifies how many warrants must be exercised to require the transfer of the underlying instrument; some warrants are issued on a 1 to 1 basis whereas others require multiple warrants to be exercised to trigger the movement of 1 unit of the underlying asset e.g. to exercise a call warrant in CBA shares with a ratio of 4 would require the investor to exercise 4 warrants to get 1 CBA share.
* Index multiplier – this only applies to index warrants; it specifies how the level of the index is converted to an amount which will be paid at exercise or expiry. The multiplier is typically expressed as a value per point e.g. $1 per point e.g. if an index closes at 5100 at the expiry date and a call index warrant has an exercise level of 4900 the holder of the warrant is entitled to receive (closing value of index – exercise value) \* index multiplier = (5100 – 4900) \* $1 = $200 per warrant.
* Exchange rate – warrants on foreign assets involve exposure to exchange rate movements, the terms and conditions of the warrant will specify how the exchange rate to be used in valuing the position will be determined.

In addition to basic call and put warrants a wide range of other types are available, these include:

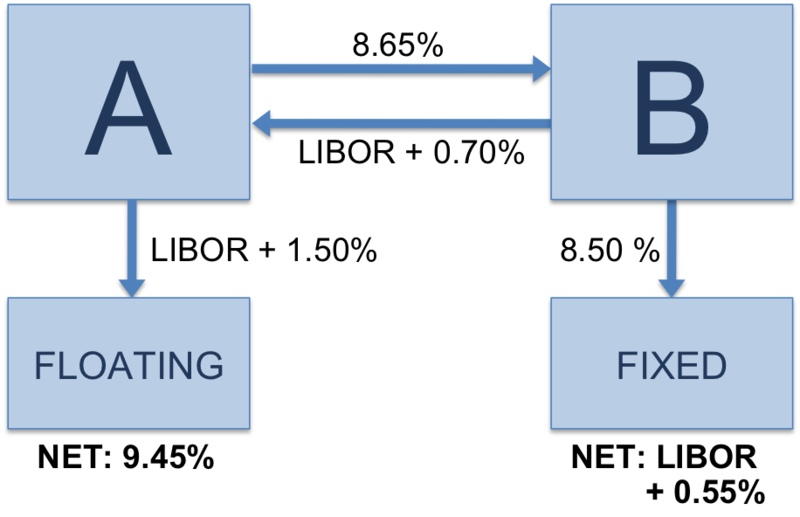
* Instalments – these instruments give investors direct exposure to the underlying shares by paying an initial payment covering part of the underlying price with a final payment due on expiry of the instrument. Instalment warrants typically have a term of between 1 to 15 years. In effect instalments are a loan to buy shares without an obligation to repay the loan or be subject to margin calls; as such they can be seen as an alternative to margin loans. At maturity or exercise the holder pays the final instalment and receives the underlying shares. A unique feature of instalments is that the holder is entitled to receive dividends and other distributions from the underlying shares during the life of the warrant. The level of gearing for instalments varies; regular geared instalments having a gearing ratio of between 40% and 60% while highly geared instruments may have a gearing ratio of between 65% and 90%. The gearing level specifies the proportion of the price of the underlying instrument which is funded by issuer i.e. highly geared instruments will have a higher final instalment compared to lower geared instruments on the same underlying asset. If the share price drops below the level of the final instalment the warrant is “out of the money”. High gearing levels require smaller price drops to take them out of the money. Higher levels of gearing also incur higher funding costs and have a higher level of risk compared to lower levels of gearing. Instalments may have either American or European exercise terms.
* Rolling instalments – these instruments are subject to regular variations in the loan amount based on current market conditions. They typically have a longer life (up to 15 years) and have a defined reset period (e.g. 12, 18 or 24 months). Funding costs must be pre-paid up to the next reset point if the holder wishes to maintain exposure. The issuer may also adjust the exercise price (loan amount) to maintain the required level of gearing; as a result the holder may be required to either pay or receive funds to or from the issuer in addition to the prepayment of the funding costs. If the investor chooses not to pay the additional funds the issuer may reduce the number of instalments held to fund the remaining holding. The investor may choose to exercise the position at each reset point and take delivery of the underlying asset.
* Self-funding Instalments (SFIs) – these warrants use the income received from dividends paid by the underlying shares to periodically reduce the loan balance. Funding costs are also periodically added to the loan amount. If the credit from the dividends is larger than the debits from the funding costs the loan value will decline over time so that, when the warrant is exercised, the final instalment will be reduced. A range of variations are available for SFIs to meet specific investment or tax objectives.
* MINIs – these are a type of trading warrant which offers leveraged exposure to the underlying asset. They allow investors to gain 1 for 1 exposure to changes in the underlying asset price for a relatively small upfront cost. MINIs may be either long or short to allow investors to trade both rising and falling markets. As such they may be used for either hedging of existing holdings or speculation. MINIs offer gearing levels between 50% and 95% and are valued by deducting the strike price from the share price for long MINIs and by deducting the share price from the strike price for short MINIs. The price of a MINI does not include funding costs which are charged daily and are added to the strike price while the position exists. MINIs have a stop loss feature which prevents the investor from losing more money than they invested. The stop loss point is relative to the strike price and varies with the volatility of the underlying asset. If the stop loss point is reached the warrant expires and any remaining value is paid to the investor. MINIs offer similar exposure to CFDs without the need to make margin payments.
* Endowments – these are long term call warrants (e.g. 10 years) over a security or basket of securities. They are issued at prices between 30% and 65% of the market value of the underlying security at the time of issue. They are intended to be held until expiry. The strike price varies over the life of the warrant. Income from the position reduces the strike price while funding costs are added. At expiry the investor may pay the strike price and receive the underlying assets. If the income reduces the strike price to zero before expiry the holder may exercise the position for a nominal amount e.g. 1 cent.

In addition to the basic types discussed above a wide range of variations are available. These may include features such as barriers and caps which limit the potential upside and downside exposure of the instruments. Warrants may be issued over a wide range of asset types including currencies, foreign shares and indices and commodities. In these cases investors must consider a range of other risk factors such as access to market information, offshore market trading hours and exchange rates.

#### Swaps

Swaps are derivatives which allow counterparties to swap future cash flows from one financial instrument with the cash flows from another financial instrument. They allow firms with a competitive advantage in one market to gain access to the counterparty’s competitive advantage in another market.

A simple example would be an interest rate swap where one party that wishes to borrow funds on a fixed basis but only has access to funds on floating basis (party A) swaps with another party which wishes to borrow on a floating basis but only has access to a fixed rate loan (party B).



In this example A borrows funds on a floating basis at a rate of LIBOR[[4]](#footnote-4) + 1.5% and swaps interest payments with B who borrows funds on fixed basis at 8.50%. They agree to swap interest rates on the following basis:

* A agrees to pay B at a fixed rate of 8.65% (called the swap rate)
* B agrees to pay A at a floating rate of LIBOR + 0.70%.

By entering into the swap A pays a fixed rate and B pays at a floating rate. To calculate the effective rates each is paying it is necessary to net together the rate at which funds are borrowed with the rate at which they are swapped e.g. A is paying (LIBOR + 1.5%) + 8.65% and receiving (LIBOR + .70%) = (LIBOR + 1.5%) + 8.65% - (LIBOR + 0.70%) = 8.65% + 1.5% - 0.70% = 9.45% fixed. B is paying LIBOR + 0.55% floating (i.e. B is paying (LIBOR + 0.70%) + 8.5% and receiving 8.65% = 8.65% - (LIBOR + 0.70%) – 8.5% = - (LIBOR + 0.55%)).

Over the life of the swap the LIBOR rate will vary but due to the swap A will pay a fixed rate of 9.45% and B will pay a floating rate of LIBOR + 0.55%. It should be noted that the principal amounts of the loans are not swapped between the counterparties i.e. the swap only relates to the interest charged on the agreed principal amounts.

The majority of swaps are done on an OTC basis and negotiated to meet the specific needs of the counterparties. In some cases an intermediary such as bank may negotiate with each party and take a margin on the rates at which the funds are swapped as their reward for matching the counterparties’ needs.

Swaps may cover a wide range of underlying cash flows besides interest rates; examples include:

* Currency swaps – these involve swapping principal and fixed rate interest in one currency with equivalent principal and interest in another currency. This allows each party to borrow locally at better rates than those available to the offshore counterparty (i.e. a local competitive advantage) and to swap the resulting loans between them so that both benefit from the lower rates.
* Commodity swaps – these are agreements where one party can lock in a fixed price for a commodity by swapping a fixed price for a floating or spot price. For example an oil producer can agree to supply oil at a fixed price for a specified period to an intermediary who can then on sell it at the current spot price. These types of swaps are used extensively in the oil industry.
* Equity swaps – these allow one party to get the benefits of owning a stock in return for paying interest on an agreed value (e.g. the market value of the securities at the time the swap is created). For instance the holder of a security could swap its income and market performance for an income stream of fixed payments from the counterparty. In return for the fixed payments to the stock holder the swap counterparty would receive the value of any income derived from the stock plus the value of any capital gain or loss in the swapped stock. This would allow the stock holder to transfer the market risk of the holding while retaining voting rights. This strategy would be appropriate where the holder thought that the value of the stock was going to drop in the short term but they wished to retain the stock for the medium and long term. Such a swap could also be used to transfer tax advantages only available to local tax payers. Equity swaps can also be used to gain exposure to markets where the investor is not allowed to directly invest e.g. due to government capital controls or foreign shareholding limits.
* Credit default swaps (CDS) – these OTC instruments allow lenders of capital to protect against default by borrowers. The agreement is based on a designated “reference instrument” which has similar characteristics to the loan being protected. The CDS buyer (lender) agrees to pay the seller a regular amount for which the seller undertakes to compensate the buyer when specified credit events impact on the value of the reference instrument (e.g. the bond issuer fails to pay the required interest or principal payments, becomes bankrupt or has its credit rating downgraded). It should be noted that anyone can buy a CDS even if they do not hold the relevant reference instrument; this allows traders to speculate on particular credit events. The “protected” value of CDS contracts can exceed the total issued value of the reference instrument; if the instrument then defaults holders would be unlikely to receive the full face value of the instrument. In these circumstances a process is defined to establish a payout figure through an auction process. There are a large number of variants to standard CDS agreements including those on baskets of instruments or securitised debt obligation instruments.

## Types of Investors

Any entity which transacts in a financial market is considered an investor. The two main categories are individual or retail investors and professional investors. Market regulators differentiate retail investors from others to ensure their interests are protected. This includes mandating different rules which brokers must follow when dealing with retail clients. The differing investor types are discussed below.

### Retail

Under Australian corporations law the term “retail client” includes everyone who is not classified as a wholesale or professional investor; the law defines income and wealth tests which are used to classify clients as wholesale. In addition to companies which do not meet the criteria to be classed as wholesale the retail category includes individuals and entities owned and managed by individuals such as family trusts and self- managed superannuation funds. In general retail investors trade less frequently and for much lower values than professional investors. As they are not expected to have a high level of knowledge about financial markets and investments governments provide for additional protection of their interests through legislation. There have been significant regulatory changes over the last 10 years aimed at enhancing the protection given to retail investors. These have included:

* Know Your Client (KYC) – these rules require brokers to clearly identify their clients to prevent money laundering, tax evasion and other illegal activity. In addition they require brokers to clearly understand their clients’ financial position, investment objectives and risk appetite before they provide investment advice.
* Statement of advice (SOA) rules – advisers which provide advice to clients are required to provide written details of the advice given, the basis for the advice, its suitability for the client (given their KYC information) and details of any remuneration which the adviser will receive if the advice is followed.
* Licensing of advisers – all financial advisers must be licensed either personally or as associates of an entity which is responsible for the advice given. These rules are intended to ensure that advisers have the qualifications required to adequately advise their clients.
* Future of Financial Advice (FOFA) reforms – these regulations are being introduced to further strengthen consumer protection; they include measures to ban conflicted remuneration structures, a fiduciary duty to act in the best interests of their clients, restrictions on when certain types of fees may be charged and a requirement for advisers to belong to a statutory compensation scheme.
* Market rules – specific rules control how brokers may trade on behalf of retail investors; these include:
  + Principal trading – if a broker trades as principal with the client they are required to disclose the fact that they did so and are restricted from charging brokerage on the principal component of the transaction.
  + Best execution – as part of the introduction of multiple markets in Australia ASIC specified that brokers must provide retail clients with the best “total consideration” for a given trade.
  + Market execution – the vast majority of retail transactions are executed on the ASX or Chi-X markets. If the broker wishes to cross[[5]](#footnote-5) a retail order they may do so but they must be able to prove that the execution was done at equivalent or better prices than were available via the market, in addition they must declare on client confirmations that the trade was “all or part crossed”.
  + Confirmations – retail clients must be provided with trade confirmation as soon as practicable, this has been interpreted that they must be produced and despatched on the day the trade was executed.
  + Client priority – brokers may not trade on their own behalf on terms better than those given to a client.

As a result of these changes several different types of retail brokers have developed:

* Full service brokers – these brokers provide a wide range of services to clients, this includes providing investment advice. As they incur costs in providing and documenting this advice they typically charge higher brokerage and other charges. In addition to share trading they offer a range of other services such as access to margin lending facilities, managed accounts, portfolio planning and reporting and access to other financial products such as managed funds and derivatives.
* Execution only brokers – these brokers do provide direct advice to clients; any executions they perform are based totally on client instructions and, as such, their charges are typically lower than full service brokers. Some execution only brokers focus on internet based client access and charge differential fees for clients who use other methods of communication.

### Professional or Institutional

This category includes corporate entities which manage investments and high net worth individuals whose primary income comes from trading and investment. They are termed institutional, professional or sophisticated investors and are considered by regulators to be sufficiently knowledgeable that they do not require the same level of regulatory protection as that given to retail investors. Examples of the reduced regulatory protection include:

* Best execution – the ASIC market rules allow professional investors to define their own “best execution” criteria to meet their specific circumstances.
* Principal trading – brokers can trade as principal with professional investors (subject to investor agreement) and charge brokerage on the transactions. In some cases the investor and broker may negotiate a deal where the broker agrees, as principal, to buy or sell an agreed number of units for an agreed price. Professional investors may query multiple brokers for indicative prices for a specific deal and then select the one which best suits its needs.
* Specialist trading services – the size of some professional investor transactions could adversely impact the market price if they were executed as a single block (e.g. a large sell order could drive the price down which would reduce the price received by the investor). Many brokers offer a range of tools to support specific trading requirements e.g. “drip feeding” smaller orders onto the market and tools which aim to deliver trades at the Value Weighted Average Price (VWAP) for the security.
* Market disclosure – market rules allow for transactions over a certain value to be executed off market to minimise market impact. While the transactions may be done “in the dark” they must still be reported to the market within a specified timeframe.

Institutional investors account for a large proportion of the turnover on equities markets. They typically trade with specialist institutional brokers; as most professional investors trade through multiple brokers, leading to in intense competition between brokers to get their business. In addition to offering specialised trading support institutional brokers provide their professional investors with access to other services including:

* Research – most institutional brokers maintain extensive research departments which provide information to investors. In some cases professional investors will place trading business resulting from the research with the broker which provided the information.
* Trade facilitation – these services can include securities borrowing to support short selling strategies, provision of finance and trading with the broker as principal to meet specific time constraints
* Prime broker services – this involves an investor reaching agreement with a broker to provide extended services such as custody, settlement services, trade finance and offshore market access. Typically the prime broker retains custody of the investor’s assets as security for funds and other services supplied. Prime broker services are widely used by investors such as hedge funds. Due to the values involved most prime brokers are owned by global investment banks.
* Rebates and other incentives – in addition to competing to provide the best brokerage rate many institutional brokers offer a range of rebates on brokerage and other non-cash incentives. This can include the use of “soft brokerage” which can be used to access broker services such as research or use of broker facilities which would normally incur a charge.

Within Australia a significant proportion of institutional investor activity is generated by superannuation funds, insurance companies and investment managers for other types of managed funds. In addition to direct equities investments these investors also trade derivatives (e.g. for hedging purposes) and debt instruments.

# Topic 2: The Trade Lifecycle

At the most basic level any equities trade involves a buyer and a seller who wish to exchange cash for securities. The equities market has developed to:

* Match buyers with sellers
* Set a price at which the buyer and seller can agree to trade
* Efficiently move the required funds and securities between the buying and selling investors with a minimum of risk for all parties.

The following diagram shows the basic flows for a simple retail transaction:



In this example a selling client places an order with their broker who then places it on the market for execution. The buying client also places an order with their broker who also places it on the market.

The market matches the sell order with the buy order and notifies both brokers that a trade has been created. The Australian market is “anonymous” in that the market does not display the broker-id on trading screens; when trades are reported they are reported using the broker id of the Central Counter Party (CCP) as the counter party; this means that a broker does not know which other broker they dealt with on a particular trade.

Both brokers add their brokerage and GST charges to the matched trade and inform their clients of the resulting values via a “Confirmation” (previously termed a contract note). Confirmations must be supplied to retail clients on the day the trade was executed. In addition to the financial values of the trade the confirmation also includes details of when the settlement is due.

Currently Australia has a T+3 settlement cycle – this means that the trade will settle 3 business days after it is created (i.e. the buyer must have paid for their stock by the 3rd day after trade date while the seller must have arranged for delivery of their stock). If the client completes their obligation to the broker then on the settlement day the seller will receive their cash and the buyer will have the stock registered into their name.

A simple retail transaction has the following stages:

* Order placement – brokers acting as agent should normally only trade based on instructions from their client. Orders may be placed by phone, email, directly into a broker web site or in writing; brokers have a responsibility to ensure that the person placing the order is authorised to place the order (KYC). Market regulations require the broker to record (and keep for 7 years) all relevant details of the order including:
  + Who placed the order
  + Time and date of order receipt
  + Type of order – buy or sell
  + Security to trade
  + Units of the security to be traded
  + Price limits specified by the client – a client may nominate either a maximum price they are prepared to pay for a buy or the minimum price at which they prepared to sell. If no limit is specified the order is said to be “at market” and will execute at the current best bid or offer price.
  + Time constraints on the order e.g. the client may specify a time frame for execution of the order, if it does not execute it will be cancelled. Brokers typically define a standard duration for orders without a client specified time constraint.
  + Details of any advice given to the client in relation to the order.
* Order placement on the market - this can be done either manually by a Designated Trading Representative (DTR) of the broker or via an electronic interface into the market. As a trading participant of the market the broker is responsible for all orders placed under its trading-id; as such they may perform vetting checks to ensure the order is valid. Depending on the method of order capture this may be either a manual or automatic process (with exceptions sent to a DTR for resolution); market regulations specify minimum requirements for automated vetting checks. In addition to vetting the order to ensure it will not interfere with the orderly operation of the market (e.g. by specifying an incorrect price limit) brokers may perform internal checks on client funds or stock availability to limit the risk of the client failing to settle. Most brokers also include a “booking reference” on the order to allow for any resulting trades to be linked to the client order. GBST broking applications support reservation and locking of client stock or cash holdings as part of the order acceptance process; brokerage rates and other specific settings are populated based on client reference data or system defaults.
* Allocation – once a trade has been created by the market and received by the broker it must be allocated to the client order, this is termed the allocation or booking of the trade. GBST broking applications have extensive support for automation of allocations. The allocation process creates a contract note / confirmation to reflect the fact that a financial obligation between the client and the broker has been created. If the order is not filled the contract will remain open for further allocations on the same trading day. If the order is filled over multiple days separate contracts will be created for each day. There can be a many to many relationship between orders and market trades e.g.
  + An order may be filled by a single trade
  + An order may require multiple trades or parts of trades to fill; each trade may be at different prices
  + A single trade may be partly allocated to multiple orders.
* Finalisation – once an order is filled (or no further trading can be done that day) the confirmation / contract note is finalised. This closes the contract to further allocations, calculates the brokerage and GST charges and updates the clients financial and stock records to reflect the new trade.
* Notification – the sending of confirmations to clients is a fundamental requirement of market regulators. Both electronic and hard copy confirmations are allowed. Confirmations give details of the number of units of stock traded, the prices at which it traded, brokerage and GST charges, settlement information such as the settlement due date and any other required information.
* Settlement – this stage involves the exchange of cash for stock to complete the transaction.

A single trade has the following settlement flows:

* Selling client to selling broker – the client provides stock and receives cash
* Buying client to buying broker – the client provides cash and receives stock
* Selling broker to buying broker – seller delivers stock to the market and receives cash, buyer delivers cash to the market and receives stock.

The movements between the broker and their clients are termed client side settlements while the settlements between the brokers are termed market side settlements. Client side settlements fall into 2 main categories:

* Retail – most retail transactions have separate settlement of the cash and stock legs. Brokers typically require payment from buyer before they deliver the stock to the client whilst selling clients must provide access to their stock before receiving payment. GBST broking applications include comprehensive controls to manage the settlement risk of retail transactions.
* Institutional / Professional – most professional investors either use a custodian to settle on their behalf or are participants in the settlement system in their own right. Settlements are typically done on a Delivery Vs Payment (DVP) basis where the cash and stock are exchanged simultaneously. DVP settlements are considered to be best industry practice as they limit the risk for both parties to the transaction.

As brokers interact with the market on behalf of both buyers and sellers and may also trade on their own behalf as principal they may buy and sell the same security multiple times per day for multiple investors. In order to maximise the efficiency of settling market side transactions and to reduce risk a range of measures have been developed. These include:

* Trade novation and netting – these processes compress a brokers market trades into a single net number of units and value bought or sold per security; the resulting obligation is termed a “Net Broker Obligation” (NBO). This greatly reduces the funding costs of settlement and greatly decreases the number of transactions to be settled. Novation transfers the counter party obligations for the trade from the broker which traded it to the Central Counter Party (CCP). This reduces the counter party risk between brokers and provides a legal basis for the netting process.
* Settlement – the NBOs created by the novation and netting processes are settled DVP as part of a daily batch on the CHESS system. The batch settlement process also includes client side DVP settlements between the broker and their institutional clients. These are netted with the NBOs on a stock by stock basis to arrive at a single obligation per stock which the broker must deliver or receive. The matching cash legs of the settlement are netted to arrive at a single net figure which the broker must pay or receive. This functionality greatly reduces the funding costs of the settlement process and greatly reduces the processing required. GBST broking applications fully support the batch settlement process and include a range of facilities to help to manage the process.

# Topic 3: Market Structure and Functionality

The equities market has 3 major functional layers:

* Trading – this function aims to match buyers with sellers and to establish a fair price for the transaction. In addition to established markets a range of alternate mechanisms have developed to allow for specific requirements. Brokers who are authorised to trade on a market are termed “Trading Participants” (TPs).
* Clearing – this function consolidates market transactions to minimise the cost and complexity of settlement and the risk of settlement failure. This is facilitated by the CCP which manages the risk of market settlements and guarantees settlement to each participant (i.e. if a broker defaults the CCP ensures that its trades are settled with the relevant counter party). Brokers which participate in the clearing process are termed “Clearing Participants” and are subject to the supervision and risk controls of the CCP. Brokers may choose to self-clear their own market trades or can outsource the clearing function to external clearing participants under a Third Party Clearing (TPC) structure.
* Settlement – this finalises the client and market side obligations by transferring the required stock and cash between the ultimate buyers and sellers. Market obligations (NBOs) and institutional DVP settlements are done as part of the daily CHESS settlement batch while the stock side of retail client transactions are settled through broker initiated transfers between CHESS holdings. The cash component of retail settlements may be done using a variety of receipt and payment methods. Brokers and other institutions which participate in the settlement batch are termed “Settlement Participants”. Brokers may either perform their own settlements or outsource the function to a TPC.

### Trading Mechanisms

Equities trading in Australia is regulated by the Australian Securities and Investment Commission (ASIC) the government department responsible for the supervision of financial markets. ASIC licences organisations to operate and participate in securities markets. There are currently 2 competing equities markets for ASX listed securities plus several small markets for stocks which are too small to qualify for ASX listing. ASIC also licences markets for derivatives and supervises the activities of CCPs and settlement services.

Equities markets may be classed as:

* Listing markets – these are licenced to list securities through the Initial Public Offer (IPO or float) process. This is primary market activity which is subject to ASIC regulations on issuing of a prospectus and is subject to the listing rules of the exchange; these may include minimum capital requirements and ongoing obligations for disclosure of information and corporate governance. The main listing market in Australia is the ASX however several niche exchanges support the listing of companies which do not meet ASX listing criteria. Once a security is listed it is then eligible for trading on the relevant exchange.
* Trading markets – these markets do not support listings or capital raisings and, as such, are limited to secondary market trading of securities listed on other exchanges; the Australian Chi-X market is an example of this type of market.
* Alternate Trading Facilities (ATFs) – these have developed since trading has become an electronic process. Typically these offer an alternative to organised markets and facilitate trading at either a lower cost or with reduced market impact. Unlike centralised markets these facilities typically do not publicly display orders prior to matching; as such they are often called “dark” venues.

The two major equities markets are operated by the ASX and Chi-X which both trade ASX listed securities. In the case of Chi-X the stocks traded are a subset of ASX listings. Details on the markets licenced to operate in Australia may be found on the ASIC web site. A core function of markets is to set a price for trading; this is typically done by enabling buyers and sellers to enter orders for matching with the opposite order type. These markets display information on pending orders to enable users to view the “depth” of the market as an indicator of the relative supply and demand for the security, for this reason they are termed “lit” markets. Regulators regard transparent access to details of both pending orders and executed trades as fundamental to the price formation process and a pre-condition to fair market trading.

The majority of Australian equities trading is done through the ASX and Chi-X markets via their Central Limit Order Books (CLOBs); these allow brokers to enter orders with an optional price limit, if no limit is specified the order will execute at the current best bid or offer. The orders are listed in two columns – the buy orders (bids) and the sell orders (offers); orders are displayed in “price / time” order i.e. the buy order with the highest limit and the sell order with the lowest limit are displayed at the top of the list; multiple orders with the same limit are displayed in strict time order. In addition to allowing continuous trading during their hours of operation most markets also support opening and closing auctions which establish the opening and closing prices for the trading day.

While CLOBs are efficient at matching buy and sell orders they can have problems when large orders are entered and displayed to other traders. In some cases the disclosure of a large order can influence the price e.g. a large sell order may cause the price to drop or a large buy order may cause the price to rise. For this reason most markets allow for specific order types which aim to limit market impact; these include:

* Undisclosed quantity orders which don’t display the order quantity; the use of these orders is restricted by a minimum value constraint.
* “Iceberg” or “Drip feed” orders where a large order is fed onto the market in smaller increments to minimise market impact.
* “Centre point” markets where trades will be executed at the mid- point between the current National Best Bid and Offer (NBBO), these are dark venues which do not display order information to other traders. They may be offered by both established markets and by ATFs. In the case of markets which also have a CLOB specific order types allow brokers to access both dark and lit liquidity with a single order.

Typically regulators restrict access to dark markets to maximise the efficiency of price formation; the restrictions may be based on size of the order or a requirement that the execution method deliver a price improvement over that available on the lit market (this is the case with centre point matching systems).

A wide range of technology has been developed to attempt to maximise trading effectiveness or to earn profits through exploiting small variations in markets; examples include:

* Smart order routing – these tools send orders to specific execution venues in an attempt to get the best available price at the time. They may also aim to minimise the market impact of large orders or to deliver trades which match a specific price target such as the Value Weighted Average Price (VWAP) for the day.
* Algorithmic trading systems – these use mathematical models and statistical techniques which aim to “beat the market” through predictive or other methods.
* High Frequency Trading (HFT) – these systems aim to identify and exploit small differences in market prices available on different venues or to identify trading intentions and “trade ahead” of other market participants. They rely on their ability to place, execute and cancel multiple orders on multiple markets in very short time frames. In most cases the actual profit on any one trade will be very small but can accumulate to significant value if performed thousands of times per day. HFT traders aim to earn profit through the “spread” between the bid and offer prices on the market.

While the majority of share trading is performed through either lit or dark markets the market regulations also allow for trades to be performed off market and then reported via a recognised market. The requirement to report off market activity aims to ensure that regulators, investors and brokers are able to form an overall picture of trading. Off market trading is, however, limited to specific types of transactions and typically subject to minimum value constraints. An example where this type of trading would be appropriate would be a situation where an institution wished to perform a very large trade in a single transaction but do not wish to skew the market. They could seek indicative bids from large institutional brokers to perform the trade as principal, after selecting the best bid they would execute the trade with the successful broker. Under these circumstances the broker could delay reporting the trade to allow them to time trade out the position via the market; if it was immediately reported the prices at which they could trade it out would be impacted as other traders took advantage of the knowledge. Current market rules require a trade to be worth at least $15million to be eligible for delayed reporting. Certain types of off-market trades are excluded from the calculation of market statistics such as the daily VWAP price for a security.

The following shows the breakdown of trading by type of execution for a typical week on the Australian market[[6]](#footnote-6):

## Clearing

The clearing process aims to maximise settlement efficiency by consolidating transactions for settlement and to reduce risk within the market.

### Role of the CCP

In the Australian equities market clearing is performed by ASX Clear (ASXC) which also acts as CCP for the Exchange Traded Options (ETO) market; clearing of futures transactions is provided by ASX Clear (Futures). In the equities market the use of a CCP provides significant benefits by reducing counter party risk and by allowing each broker’s trading to be “netted” for settlement[[7]](#footnote-7). When a trade is created by the ASX or Chi-X markets the details are sent to the CCP; if the trade is acceptable the CCP novates the trade and formally accepts it for clearing. The novation process replaces the original trade with 2 new trades as shown below:



Novation enables the CCP to guarantee trade settlement even if the original counterparty defaults. In effect the novation process transfers the broker’s settlement risk from the original counterparty to the CCP and allows the CCP to manage its risk against each participant in an efficient manner. The operations of the CCP are monitored by government regulators which specify standards for financial stability and risk management.

Participation in the CCP is subject to business rules which are given legal effect through legislation and licencing by the government. Examples of the risk management methods applied to participants include:

* Participation criteria – these specify the minimum conditions an entity must meet to gain clearing participation; these include:
  + Minimum capital and financial resources
  + Suitably qualified responsible executives e.g. Compliance officers
  + Internal policies and procedures for operations and risk management
  + Technology to support connectivity to the clearing and settlement system
  + Business continuity safeguards to minimise disruptions due to disasters or system failures.
* Ongoing monitoring of financial resources / capital adequacy and exposure – this process requires participants to monitor and report their risk and available financial resources to ensure they do not take on more exposure than their resources can support or exceed limits set by the CCP. This process also includes “stress testing” to test the entities ability to manage unusual or extreme market events.
* Margining of unsettled exposure – as part of the clearing process the CCP requires that participants provide either cash or other collateral to cover the CCP’s risk if the participant defaults. In the equities market the margin calculation aims to ensure that the margin held would cover the potential loss to the CCP from liquidating, under normal market conditions, the unsettled positions of the defaulting participant.

In addition the CCP maintains significant financial resources to enable it to continue to settle after the failure of a participant; in Australia these resources must be adequate to cover the default of the CCP’s largest participant (including its affiliates). In the event of a default the rules of the CCP specify the order in which these resources would be used and how they would be replenished. ASX Clear currently maintains the following default resources (in order of use):

* $71.5 Million “Restricted Capital Reserve” – these funds were transferred from The National Guarantee Fund when ASX Clear became the CCP for the Australian equities market.
* $3.5 Million ASX Clearing Corporation[[8]](#footnote-8) equity
* $75 Million subordinated debt from ASX Group
* $100 Million ASX Clearing Corporation equity
* $300 Million “Emergency Assessments” from participants – these funds would only be called when all other resources are exhausted; the rules specify how the value to be called will be apportioned to the remaining trading participants.

The total risk resources for ASX Clear (covering the equities and ETO markets) total $550 Million of which $250 Million are held as liquid funds available in short timeframes. These resources are in addition to any margins that participants have already paid as part of normal business processing. Many international CCPs require participants to contribute to a mutualised default fund[[9]](#footnote-9) as a condition of participation; ASX Clear does not currently require such contributions and has limits on each participant’s exposure to Emergency Assessments.

Clearing participants in the equities market are responsible as principal for all obligations with the CCP. In Australia all transactions are processed through a single CCP account to maximise netting benefits and operational efficiency; in some other markets transactions are segregated into separate client and principal accounts at the CCP to prevent the use of client assets to cover principal obligations. ASX Clear has no knowledge of the obligations between the broker and their clients and the CCP does not provide protection for these obligations. In Australia the National Guarantee Fund provides coverage against broker exposure to their clients for trades done on the ASX. Chi-X is also required to have cover as a condition of its licence to operate a market in Australia.

In derivatives markets the CCP is responsible for ensuring that the parties to a transaction can meet any financial obligations which it entails. Unlike equities trades which have a fixed time frame between execution and settlement derivatives positions remain open until they are closed, expire or are exercised and are subject to ongoing risk management of the resulting exposure. To facilitate this management ASX Clear uses a different account structure for the ETO market, it includes:

* A house account for all positions held by the participant as principal.
* Segregated client accounts which include all open positions for a single client.

The use of separate accounts allows the CCP to calculate margins at the account level; the current margin calculation methodology[[10]](#footnote-10) is based on the “portfolio” of positions held by the client to allow for offsets of positions and exposure due to a range of other factors (e.g. risk from concentration of exposure in a single industry sector). The structure provides the broker with detailed information on each client’s margin obligations as an aid to the collecting the required collateral. The participant is still responsible as principal for providing the required collateral to cover each day’s margins however the client obligations are netted for settlement purposes.

### Clearing Models

The Australian market allows for separation of the various business functions. As such a participant may trade, clear and settle its own business (self-clearing) or may restrict its activities to trading and outsource the clearing and settlement obligations to a Third Party Clearer (TPC). By using the services of a TPC a Trading Participant (TP) greatly reduces the capital required to operate in the market[[11]](#footnote-11); this reflects the fact that they are transferring the risk of clearing and settlement to the TPC. By taking on the risk the TPC becomes the entity responsible for all CCP exposure including margins and for the settlement of client transactions. TPCs benefit from economies of scale through the ability to net the market obligations from multiple TPs into a single obligation. The market also supports selective use of a TPC i.e. a participant may self-clear its normal business but have an arrangement to use a TPC for large transactions which would cause it to exceed its liquid capital or margin limits.

Other markets, including the Australian derivatives markets, support alternate clearing structures. The main variation is the model where the client establishes a relationship with a specific clearer who is responsible for the clearing and settlement of their trading activity. This allows the client to deal with a single entity for clearing and settlement purposes and maximises the efficient use of collateral as all obligations can be netted to reduce the value subject to risk. Under this model the client trades with the broker of their choice but instructs them to settle with their nominated clearer. Typically this requires a mechanism for the executing broker to “give up” the trade to the clearer who assumes the settlement obligation and pays the executing broker their brokerage. The clearer who takes up the trade then settles with the market and the client. Currently the Australian ETO and futures markets support client directed clearing; if it is required in the equities market (e.g. the client uses a prime broker’s services) the brokers typically enter into trades to transfer the obligation which they then settle using normal procedures.

## Settlement

The settlement process moves the cash and stock required to finalise market trades and obligations between the broker and their clients.

The main settlement service for equities in Australia is provided by ASX Settlement which operates the CHESS system. CHESS is a fully electronic system for:

* Providing processing services for ASXC to support its clearing processes, these include trade capture, novation, trade netting and DVP settlement of NBOs.
* Settling cash and stock movements on a Delivery Vs Payment (DVP) basis via a daily batch process. Transactions settled include both NBOs and settlements between brokers and other participants such as custodians settling on behalf of professional investors. As part of the settlement process each participant’s obligations are netted to a single net movement per stock (either in or out) and a single cash value to be paid or received. CHESS also supports a non-batch DVP settlement facility which uses the Reserve Bank RTGS system to settle the cash; this service is not currently used by any participant.
* Performing Free of Payment (FOP) transfers between CHESS holdings, between the issuer and CHESS sub-registers and between participants.
* Issuing securities representing holdings of foreign stocks, government bonds and other instruments; these securities are called “Chess Depository Receipts” and allow domestic investors to trade and settle these instruments using local currency and settlement methods.
* Acting as a gateway to the share registries which hold the full record of ownership for listed companies; in addition to processing changes in ownership participants may establish sponsored holdings and maintain client information held by the registry such as tax file number (TFN), address and contact information and bank account details.
* Settlement of primary market transactions such as IPOs and the issue and redemption of unlisted managed fund units.

In order to facilitate the electronic book entry settlement of securities CHESS maintains a “sub-register” of holdings. The share register for CHESS eligible for securities is split into 2 parts:

* The Issuer sponsored sub-register – these holdings are maintained by the relevant share registry; changes in the holding due to trading activity are updated by specific CHESS messages which move stock between the issuer register and the CHESS sub-register. Each security holding has a unique Share Holder Reference Number (SRN) which must be quoted when updating the issuer sponsored sub-register. Each security held by an investor will have a different SRN number which complicates investor record keeping. When adding to a holding the existing SRN number must be provided or a new SRN will be issued.
* The CHESS sub-register – once securities are in the CHESS sub-register they can be moved between holdings as required for settlement purposes. Each holding is “sponsored” by a CHESS participant and any changes in the holding are managed by that participant or, in the case of corporate action adjustments generated by the share registry, notified to the participant. At the end of each day the closing balance of each holding is notified to the registry to ensure their records are up to date. CHESS holdings are recorded against a specific Holder Identification Number (HIN) managed by the sponsoring participant. The HIN can have holdings in multiple securities recorded against it; this allows investors to consolidate multiple holdings against a single ID. Sponsored holdings allow brokers and other participants to manage changes in the holding e.g. a broker selling stock can reserve units on sponsored holding to reduce the risk of the client failing to deliver.

CHESS has the following types of participants:

* General / settlement participants – this category includes self-clearing brokers, TPCs and non-broker entities such as custodians and margin lenders; they can:
  + Participate in the daily settlement batch for DVP settlements
  + Process FOP settlements and transfers
  + Perform processing for ASXC Clearing participants
  + Sponsor and manage both principal and client CHESS holdings; this includes HIN issue and conversions and transfers of stock to and from the CHESS sub-register.
* Account participants – these entities may sponsor and manage their own and their client holdings but do not participate in the CHESS settlement batch. They are required to have an agreement with a settlement participant to settle on their behalf. The main use of this model is to allow brokers using a TPC to remain the sponsor of their client holdings.
* Banks – these provide funding services to settlement participants. As part of the batch process a net value of funds due to or from a participant is calculated; if the participant owes funds their bank is requested to confirm that they will fund the settlement. The funds are moved via the Reserve Bank Real Time Gross Settlement (RTGS) system.
* Shares registries – all movements to and from the CHESS sub-register are processed by the registry; in addition they receive details of the closing daily balance of CHESS holdings. Sponsoring participants may update holder details such as addresses, tax file numbers and bank account details. Registries originate and send the CHESS messages required to adjust holdings as a result of corporate actions.
* Specialist participants – this is a limited form of participation to process a specific type of transaction e.g. to manage a takeover offer.

Participation in CHESS is subject to business rules on financial resources, staffing, technical capabilities and business continuity arrangements. The ability to maintain CHESS connectivity is critical to the operations of self-clearing brokers and TPCs. The business rules of the market dictate that trading is subject to having the ability to clear and settle the resulting transactions; a failure to maintain this capability will result in exclusion from the market and significant financial penalties (e.g. fail fees) for failing to settle existing transactions. Due to the real time nature of the processing it is unlikely that a broker could continue to operate if the loss of connectivity exceeded 1 day. The knock on effects of a significant participant failing to meet their settlement obligations could result in a major disruption to the overall market irrespective of the CCP being responsible for the settlement of novated market transactions. The CCP may be able to cover a financial short fall but would not be able to meet the stock delivery obligations in the short term.

CHESS uses a proprietary asynchronous message based protocol for connectivity and data communications. All traffic is encrypted using industry standard methods which support message authentication to detect data corruption or tampering. Participants must either pass technical accreditation tests or use an accredited connectivity application before being authorised to process live transactions. The GBST CHESS communication engine, CHESSLINK, was the first accredited application; it provides CHESS connectivity for all GBST applications as well as several external systems.

The CHESS message set may be broken into several categories:

* Sequence dependant – all messages which update CHESS holding balances include the closing balance of the holding; this provides the ability for client applications to “self- reconcile” after each message to ensure that the internal records are synchronised with CHESS. It also means that all messages relating to a specific stock must be processed in order to maintain the synchronisation. Some workflows also use a “message set” composed of multiple detail records followed by a single final message (e.g. the trade netting workflow sends message for each netted trade followed by a single NBO notification of the netted totals). This category may include both messages which are part of a user initiated workflow (e.g. in response to a previous request) and unsolicited messages initiated by third parties (e.g. notification of a holdings balance change due to a corporate action generated by the share registry).
* Non sequence dependant – these messages typically relate to a specific event and do not have any relationship to other messages; as such they may be processed through multiple streams (e.g. trade notification messages provide details of novated trades accepted for clearing).
* Report messages – CHESS supports a range of reporting message sets which may be requested on an as required basis by users; as they do not change the state of any holding or transaction they are not subject to strict sequence controls.
* Administrative messages and event notifications – in addition to supporting functions such as message re-send requests there are messages which notify client applications of specific events (e.g. End of settlement batch processing).

Settlement participants are required to setup specific CHESS holdings for use in the settlements process. These are termed “Entrepot”[[12]](#footnote-12)nominee accounts; they fall into 2 categories:

* Accumulation – this type is used as a temporary location for holding stock prior to delivery e.g. sellers stock may be moved to this account before settlement date or stock received from the market may be moved here before it is delivered to a buyer. CHESS rules prohibit the use of these accounts for custodial purposes and impose time limits on how long stock may be held.
* Settlement – this type is used by CHESS as the source of stock due to the market and the destination for stock received from the market. Delivering participants are required to have sufficient stock to meet their outward delivery obligations in the account before settlement cut-off. Each settlement account is linked to a Payment Facility used for settlement of cash movements; each Payment Facility is linked to the participant’s bank[[13]](#footnote-13) responsible for receiving and paying cash. If the participant owes cash the relevant bank must authorise the value as part of the batch settlement process.
* Unpaid buyers - GBST broking applications support a separate “Unpaid Buyers” account to segregate stock held for buyers who have not paid for buy transactions or to consolidate stock from the accumulation and settlement entrepots prior to delivering it to buyers. This account is not a recognised CHESS entrepot and its use is optional.

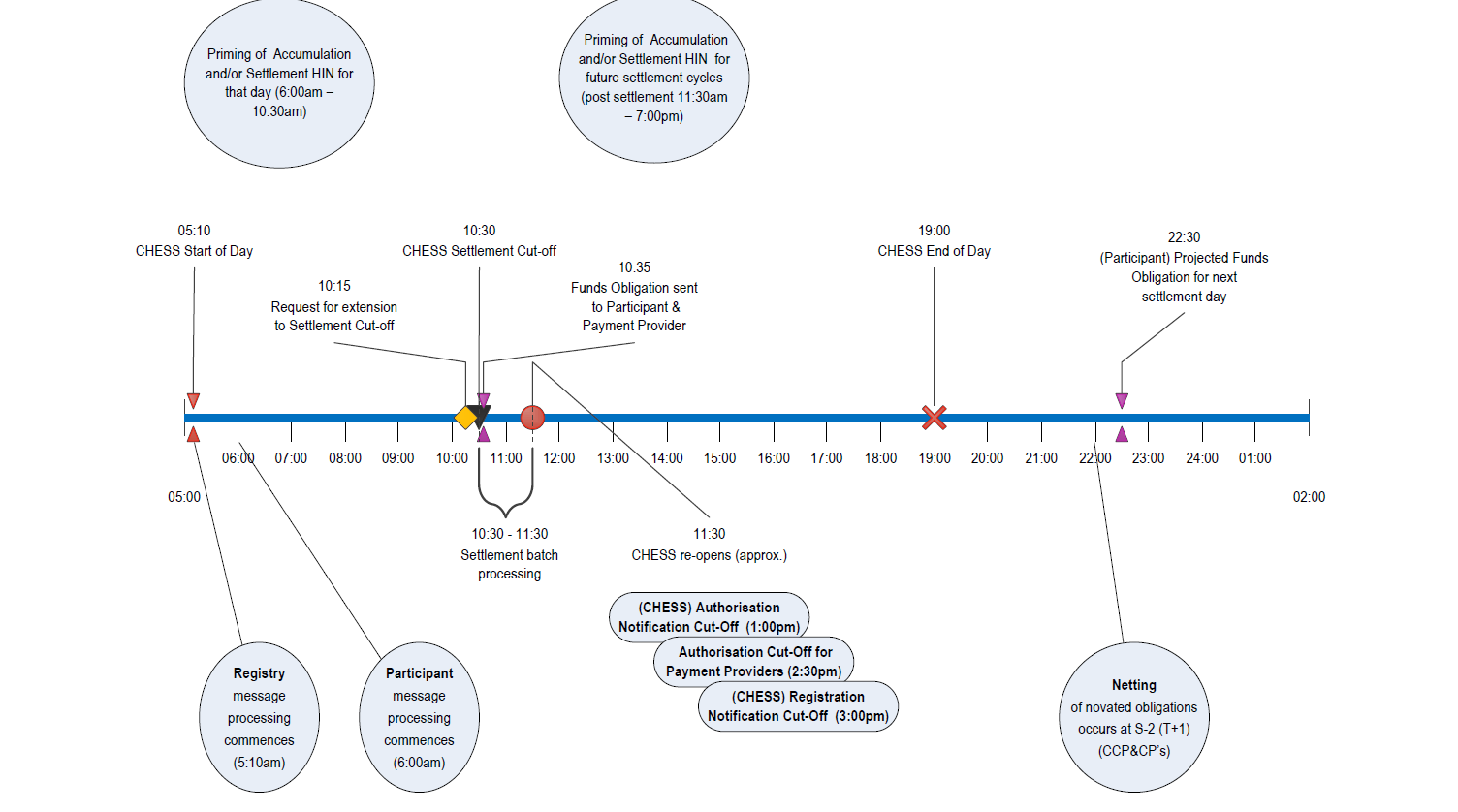
In addition to the default entrepots used for normal settlements participants are required to setup a separate set for processing stocks subject to foreign ownership limits. They may create multiple accumulation and settlement entrepots to manage the settlement process; this allows specific transactions to be segregated to ensure they settle on time.

Movements of stock on the CHESS sub-register may be initiated by:

* Sponsoring Participants – the sponsoring participant may initiate movements between holdings under their control for a number of purposes including:
  + Transfers to and from the Issuer Sponsored sub-register – these may be done to convert client holdings as part of client take on or to settle client trading activity. Stock from selling clients is typically moved to the accumulation entrepot before settlement date, deliveries to buyers may be done from either entrepot.
  + To settle sponsored client trades – stock from selling clients can be moved to the accumulation entrepot before settlement date or it may be scheduled for movement as part of CHESS settlement processing, deliveries to buyers may be done from either entrepot on either a demand or scheduled basis.
  + Settlement processing – these movements are typically done between the entrepots; moving stock to the settlement account before settlement is commonly termed “priming”.
  + Transfer of sponsorship – if a client changes their broker they can request the transfer of their holdings between brokers.
* CHESS – as part of the batch settlement process CHESS moves stock to and from the settlement entrepot.
* Registries – registries may update CHESS holdings as a result of corporate actions or product acquisitions such as warrant exercises.
* ASX Clear – CHESS supports the pledging of client stock as collateral against ETO margins, if required ASX Clear can liquidate the collateral resulting in a reduction in the client’s holding.
* Takeovers – CHESS supports the pledging of client stock to accept a takeover offer, if the offer is successful the participant managing the takeover may transfer the pledged stock.

As previously noted the methods used to settle trades differ by the type of investor. The vast majority of institutional trades are settled via CHESS DVP settlements where the cash and stock are exchanged as part of a single transaction. Providing that these transactions are processed on the correct settlement date the fact that these settlements are netted with the market side NBOs in a single settlement batch greatly reduces the need for brokers to fund the settlement process. Under ideal conditions the stock and cash obligations from the client and market sides net each other out; under these circumstances the broker would receive the value of brokerage and GST charged on the client trades.

CHESS Processing Timeline:



Retail transactions are split into separate cash and stock legs with only the stock leg being processed through CHESS. If the broker does not receive cleared funds from buyers prior to settlement date they will be required to fund the market side settlement until the client funds have been received. Receipt of stock for sell trades is under the control of the broker when the client has a sponsored holding; for issuer sponsored holdings the receipt of stock depends on the broker having the correct Shareholder Reference Number (SRN) which is required to move stock from the issuer sponsored holding into the CHESS sub-register. Most brokers require that the client provide the SRN before they will process a sell order. CHESS has functionality for brokers to query the registry for SRNs and to validate that the holding has sufficient stock however these messages incur CHESS charges and reduce the value of brokerage earned on the transaction.

Retail cash settlement methods supported in GBST broking applications include:

* Direct debit and credit – these methods depend on the broker having the appropriate bank account details and client authorisations. Funds are typically transferred overnight.
* Cash Management Trust (CMT) accounts – GBST has developed interfaces which support integrated access to CMT accounts on either a real-time or batch basis. The real-time capability optionally supports the reservation and locking of client funds to cover buy transactions. Funds will be paid or received in either real-time or as part of a daily net movement. This is the preferred method as the broker can pre-validate funds and may also earn a commission on funds under deposit. Clients benefit from the higher interest paid on these accounts compared to normal bank transaction accounts.
* Client deposits into brokers account – the rise of internet banking has made this a very common method for clients to pay for buy trades. Typically the broker will receive funds overnight but the timing is under client control.
* BPAY – this is an alternate method for clients to pay for buy trades. Typically the broker will receive funds overnight but the timing is under client control.
* Cheques – this method does not deliver funds to the broker in the required timeframe due to delays in receiving and banking the cheque and bank clearance times. Payments to clients also incur extra costs for postage and additional administrative overhead in bank reconciliation processing.

## Custody

Investors may hold shares:

* Directly registered in their name; these records may be maintained by either a company share registry or via the records of a Centralised Securities Depository (CSD). This type of holding allows the investor to directly receive the benefits of ownership (e.g. dividend income and voting rights) directly. In Australia this is the most common method for retail investors to hold shares; both the Issuer Sponsored and CHESS sub-registers provide this type of holding. This form of holding is commonly called “name on register”.
* Via a custodian – under most custody arrangements the stock will be held in the name of a “nominee” with the holder’s beneficial ownership recorded in the custodian’s records[[14]](#footnote-14). Under this model the custodian is responsible for passing on any benefits of the share holding onto the investor. This type of holding is commonly used by investment institutions and retail investors using the services of a broker which provides margin lending facilities as part of its service.

### CSDs & Registries

The fundamental role of share registries is to maintain a company’s share register or list of share-holders; this typically includes recording initial share holdings following an IPO, changes of ownership from share trading and changes to holdings from corporate actions. Most also process corporate action events on behalf of the company and support share-holder voting at company meetings. Prior to the introduction of electronic book entry settlement systems they were also responsible for the issue and validation of share certificates.

The development of electronic book entry settlement systems made the use of share certificates and associated transfer documents obsolete as a means of recording changes in ownership. The process of moving from a paper based transfer system to an electronic system is termed “de-materialisation”; in Australia this was implemented through the introduction of the CHESS sub-register to operate in parallel with the existing company register. This method required share registries to participate in CHESS but significantly reduced their internal costs of processing documents. These changes were facilitated by legislation which enabled electronic records to be the only method of recording share holdings.

In markets where the use of share certificates was retained an alternate method facilitating electronic settlement was used. This involved the extension of the model where a nominee holding stock on behalf of multiple investors could transfer shares between holdings by book entry; as there was no change in the nominee’s holding it did not require any new certificates to be issued or old certificates to be cancelled. The responsibility for maintaining the electronic record of ownership and processing changes in ownership was passed to a depository nominee or Central Securities Depository (CSD) which holds the relevant share certificates and appears on the company register as the holder of the stock. The level of de-materialisation varies by market, in some cases the use of share certificates is still allowed but typically these must be converted to electronic holdings if the investor wishes to sell the shares and pay additional costs if they wish to be issued with a share certificate. Where share certificates are no longer issued to investors the depository nominee ultimately holds a single certificate covering the total issued number of shares. This model is the most common method of facilitating book entry settlements and is used in the major North American, European and Asian markets.

### Custodians

A custodian is a financial institution which holds customers' securities for safekeeping to minimize the risk of their theft or loss. In addition to holding securities for safekeeping, most custodians also offer a variety of other services including account administration, transaction settlements, collection of dividends and interest payments, tax support and foreign exchange. The fees charged by custodians vary depending on the services required by the client. Many firms charge custody fees that are based on the aggregate value of the holdings, in addition most services such as settlements and dividend collection incur a charge. In many cases the custodian will also pass on external costs such as message fees charged by CSDs. Some institutions such as Australian superannuation funds are required by law to use a custodian to hold the fund’s assets. Given the value of assets held by custodians they are usually operated by large financial institutions such as banks.

In addition to safekeeping the use of a custodian allows an institution to transact and hold securities in markets where they do not have a local presence. In some cases the institution will enter into a relationship with a Master Custodian which will be responsible for holding assets in all markets; if the master custodian does not have a local presence in a specific market they will typically appoint a sub-custodian to hold assets on their behalf.

# Topic 4: Regulation & Compliance

# Topic 5: Corporate Actions

# Topic 6: Financial Markets in Australia

## Equities

## Derivatives

## Debt

# Topic 7: International Markets

1. In some markets the term “Notes” is used for instruments with maturities of less than 10 years; the term bonds will be used in this discussion. [↑](#footnote-ref-1)
2. Over the counter trades are agreed between the buyer and seller – i.e. they are not created by a centralised trading mechanism or market. [↑](#footnote-ref-2)
3. Bond yield formulas are standardised but may vary by market, they support calculation of a price for a given bond at a specified yield or a yield from a specified price. Outputs also include an accrued interest value in most cases. [↑](#footnote-ref-3)
4. London Interbank Overnight Rate – this is widely used international benchmark for short term interest rates; it is an estimate of the interest rate at which banks are prepared to loan each other overnight funds. [↑](#footnote-ref-4)
5. A crossing occurs when a broker acts for both the buying and selling clients to a trade; the matching of the orders may be done either within the broker or on the market. [↑](#footnote-ref-5)
6. Off market value includes trading through non ASX or Chi-X dark ATFs [↑](#footnote-ref-6)
7. ASX Clear typically has a netting efficiency of approximately 99% by number of trades and 62% by value (e.g. the average volume of 884,000 trades reduces to 13,000 settlements and the average gross trade value of $4 Billion is reduced to $1.5 Billion for settlement) [↑](#footnote-ref-7)
8. ASX Clearing Corporation is the holding company for ASX Clear and ASX Clear (Futures), it is a wholly owned subsidiary of ASX Ltd. [↑](#footnote-ref-8)
9. Mutualised default funds are contributed by participants and may be used by the CCP to cover participant defaults; if the funds are used the participants are required to replenish the fund. Unlike margins which cover a specific participant’s exposure they may be used to cover default by any participant. [↑](#footnote-ref-9)
10. ASX Clear currently uses the SPAN methodology for margining derivatives exposure. It is based on the total portfolio held by the client and compares a range of scenarios to arrive at the account margin position. SPAN is the de-facto industry standard for derivatives margin calculation. [↑](#footnote-ref-10)
11. Liquid capital required for a Self-Clearer is $5million, for a TP using TPC it is $100,000, for a TPC it is $5million per TP up to $20Million. [↑](#footnote-ref-11)
12. Entrepot is a term derived from French which means a warehouse or other location used for storing goods for onward delivery. [↑](#footnote-ref-12)
13. The mapping of a Payment Facility to actual bank accounts is agreed between the participant and their bank; as such a single Payment Facility may be linked to multiple bank accounts. [↑](#footnote-ref-13)
14. While the nominee appears as the holder on company records most jurisdictions have laws which require custodians to disclose details of the actual holder to taxation authorities and other relevant agencies. [↑](#footnote-ref-14)